Monolithic Linear IC

SANYO No.2667A

LA4538M

Ripple Filter-Provided Stereo Power Amp for 1.5V Headphone Stereos

Features

- Low current dissipation
- Excellent reduced voltage characteristics
- Minimum number of external parts required
- On-chip power switch function
- Power amp section
  - Output power 8mW typ (V_{CC}=1.5V,R_L=16Ω,f=1kHz,THD=10%)
  - Ripple rejection 46dB typ (V_{CC}=1.0V,V_R=−30dBm,f_R=100Hz)
  - On-chip muting function
- Ripple filter section
  - Ripple rejection 39dB typ (V_{CC}=1.0V,V_R=−35dBm,f_R=100Hz)
  - Less output voltage loss
  - Pin 8 can be used to perform the muting function.

Maximum Ratings at Ta=25°C

				unit
Maximum Supply Voltage	V_{CC} max	Quiescent	4.5	V
Maximum Output Current	Io7	Pin 7 flow-out current	5.0	mA
Allowable Power Dissipation	Pd max		300	mW
Operating Temperature	Topr		−20 to +75	°C
Storage Temperature	Tstg		−40 to +125	°C

Operating Conditions at Ta=25°C

			unit
Recommended Operating Voltage	V_{CC}	1.5	V
Operating Voltage Range	V_{CC} op	0.9 to 4.0	V
Recommended Load Resistance	R_L	16 to 32	Ω

Operating Characteristics at Ta=25°C,R_L=16Ω,Rg=600Ω,See specified Test Circuit.

			min	typ	max	unit
Quiescent Current	$I_{CCO(1)}$	V_{CC}=1.20V,quiescent,R_{L3}→OFF		4.5	7.0	mA
	$I_{CCO(2)}$	V_{CC}=2.50V,pin 14→GND,R_{L3}→OFF		1.5	2.5	mA
	$I_{CCO(3)}$	V_{CC}=2.50V,pin 1→GND,R_{L3}→OFF			1.0	μA
Voltage Gain	VG	V_{CC}=0.90V,f=1kHz,Vo=−20dBm	27.5	29	31.5	dB
Voltage Gain Difference	ΔVG	V_{CC}=0.90V,f=1kHz,Vo=−20dBm			1.0	dB
Total Harmonic Distortion	THD	V_{CC}=1.20V,f=1kHz,Po=0.5mW		0.9	1.5	%
Output Power	Po	V_{CC}=1.50V,f=1kHz,THD=10%	5	8		mW

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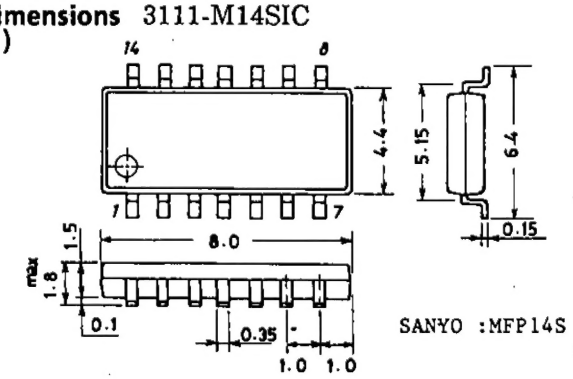
Package Dimensions 3111-M14SIC
(unit: mm)



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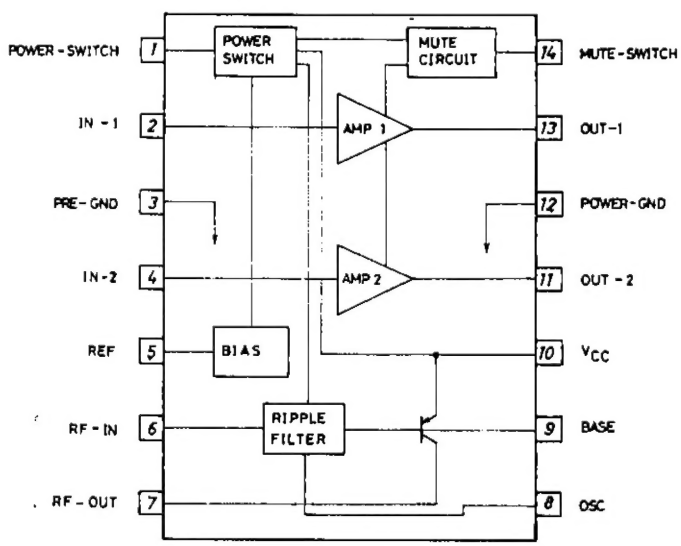
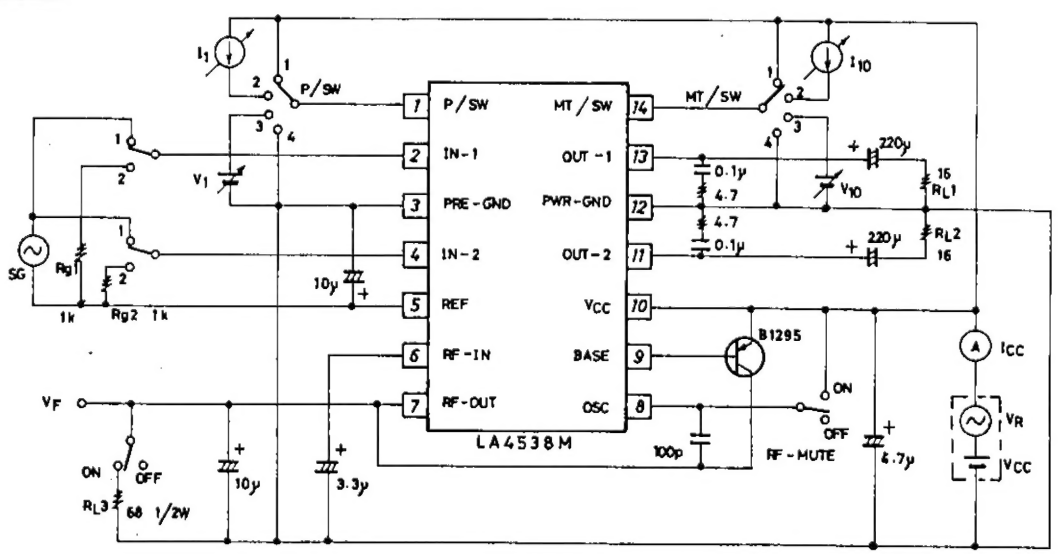
			min	typ	max	unit
Crosstalk	CT	V_{CC}=1.20V,f=100Hz,Rg=1kΩ, Vo=−20dBm	40	45		dB
Ripple Rejection (Amp Section)	SVRR(1)	V_{CC}=1.00V,f=100Hz,Rg=1kΩ, V_R=−30dBm,BPF=100Hz	40	46		dB
Ripple Rejection (Filter Section)	SVRR(2)	V_{CC}=1.00V,f=100Hz,V_R=−35dBm	34	39		dB
Output Noise Voltage	V_{NO}	V_{CC}=2.50V,Rg=1kΩ,BPF=20Hz to 20kHz		55	80	μV
Power ON-State Current Sensitivity	$I_{1(ON)}$	V_{CC}=0.85V,V_{pin5}≧0.5V		0.1	1.0	μA
Power OFF-State Voltage Sensitivity	$V_{1(OFF)}$	V_{CC}=0.85V,V_{pin5}≦0.1V	0.5	0.6		V
Muting ON-State Current Sensitivity	$I_{14(ON)}$	V_{CC}=0.85V,V_{pin5}≧0.5V		0.1	1.0	μA
Muting OFF-State Voltage Sensitivity	$V_{14(OFF)}$	V_{CC}=0.85V,V_{pin5}≦0.1V	0.5	0.6		V
Ripple Filter Output Voltage	V_F	V_{CC}=1.00V,R_L=68Ω	0.90	0.94		V

Equivalent Circuit Block Diagram

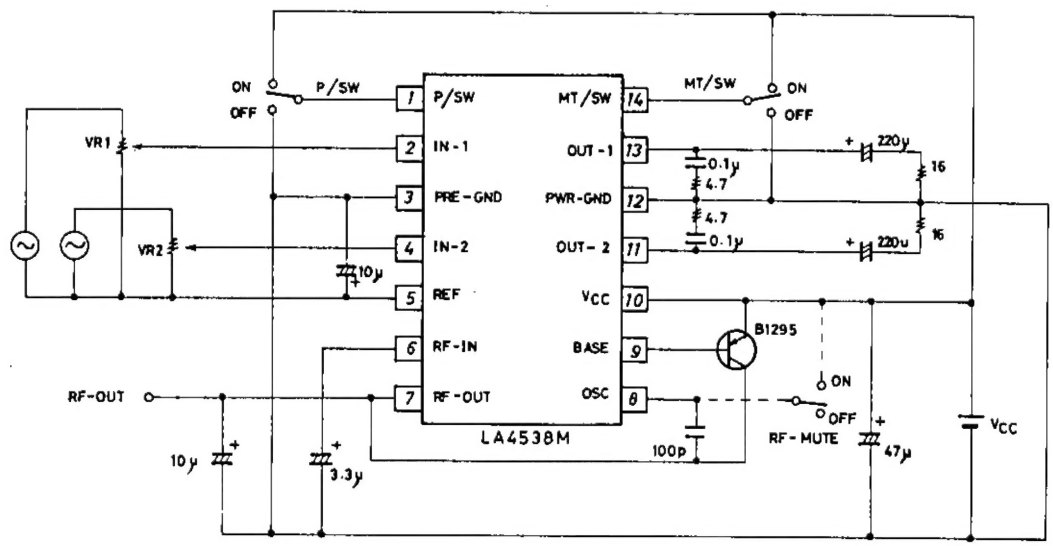


Unit (resistance: Ω, capacitance: F)

Test Circuit



Sample Application Circuit



Unit (resistance: Ω, capacitance: F)